IT IS CLAIMED:

1. For a digital video signal obtained from a photo-sensor having a two-dimensional array of individual pixels with an optical field incident thereon wherein the video signal of the optical field is altered according to an additional intensity distribution pattern across the array, a sequence of outputs of the individual pixels resulting from said pixels being linearly scanned across the optical field forming the photo-sensor digital video signal, a method of modifying the video signal to correct for the intensity distribution pattern, comprising:

maintaining modification data of the intensity distribution pattern as a function of radial distances of the pixels from an optical center of the intensity distribution pattern defined to include at least one elliptical or hyperbolic intensity pattern across the sensor,

calculating the radial distances of the individual pixels being scanned from their linear position within the two-dimensional array,

generating modifications for the individual pixels being scanned from the image modification data being accessed by the calculated radial distances thereof, and

combining the generated image modification data with the outputs of the corresponding individual pixels being scanned, thereby modifying the sequence of outputs of the individual pixels according to the image modification data.

2. The method of claim 1, wherein the calculating, generating and combining steps are performed for the individual pixels being scanned at least as fast as the sequence of outputs of the pixels being scanned appear in the video signal outputted from the image sensor.

3. The method of claim 1, wherein the image modification data being maintained includes correction in the outputs of the individual pixels for intensity variations across the optical field that are introduced by any one or more of an optical system imaging the optical field on the sensor, by variations in sensitivity across the sensor itself, or by light reflections off the internal surfaces of the enclosure which houses the optical system and sensor.

4. The method of claim 1, wherein maintaining the image modification data includes maintaining a plurality of sets of image modification data for the individual pixels being scanned, one set of data for each of a plurality of color components of the optical field.

5. The method of claim 1, wherein the maintaining, calculating, and generating functions are all accomplished on a single integrated circuit chip.

6. The method of claim 5, wherein the maintaining, calculating and generating functions are all performed by electronic circuits dedicated to carrying out those functions.

7. The method of claim 1, wherein maintaining image modification data includes storing points along a single radius across the intensity distribution pattern from the optical center thereof and values of slopes between said points.

8. The method of claim 7, wherein the values of said stored points have been calculated from measurements through the optical sensor by the device optical system viewing an image field having a uniform intensity thereacross, characterizing intensity variations of the video signal output of the sensor by defining one or more sets of ellipses or hyperbolas, finding a single optical center of the intensity variation pattern and then calculating values of a set of points along the single radius as the modification data.

9. The method of claim 8, wherein characterizing intensity variations of the video signal output of the sensor include defining two or more sets of ellipses or hyperbolas.

10. The method of claim 1, wherein maintaining modification data of the intensity distribution pattern as a function of radial distances of the pixels from an optical

center of the pattern includes defining the pattern to include two or more elliptical or hyperbolic intensity distributions across the sensor.

11. The method of claim 10, where defining the pattern as two or more elliptical or hyperbolic intensity distributions includes finding a single optical center of the intensity variation pattern and then calculating values of a set of points along a single radius as the modification data.

12. The method of claim 1, wherein calculating the radial distances of the individual pixels from their linear position within the two-dimensional array includes adding a value to the radial distance calculated for the immediately preceding scanned pixel.

13. The method of claim 12, wherein calculating the radial distances of the individual pixels additionally includes doing so independent of an angular position of the single radius.

14. The method of claim 12, wherein calculating the radial distances of the individual pixels additionally includes doing so without multiplication or division.

15. A method of modifying a digital video signal from a photo-sensor having a two-dimensional array of individual pixels to compensate for an intensity variation pattern imposed upon an optical field incident thereon, comprising:

maintaining image modification data derived from characterizing the intensity variation pattern as a combination of two or more geometric shapes that are combined to define the pattern by a single optical center and single defined shape,

generating modifications for the individual pixels being scanned from the image modification data, and

combining the generated image modification data with the outputs of the corresponding individual pixels being scanned, thereby modifying the outputs of the individual pixels according to the image modification data.

16. The method of claim 15, wherein the two or more geometric shapes include circular, elliptical or hyperbolic shapes.

17. The method of claim 16, wherein maintaining image modification data includes representing the two or more geometric shapes as a single geometric pattern having an optical center.

18. The method of claim 17, wherein generating modifications for the individual pixels includes referencing a single set of data along a radius extending from the optical center that is independent of an angular orientation of the radius.

19. The method of claim 17, wherein generating modifications for the individual pixels additionally includes referencing a table of modification values as a function of radial position of individual pixels from the optical center and calculating radial distances of individual pixels within the two-dimensional array by adding a value to the radial distance calculated for the immediately preceding scanned pixel.

20. An integrated circuit chip containing circuits capable of receiving and processing a stream of data of individual photo-detectors obtained from linearly scanning a two-dimensional optical field incident thereupon according to a predetermined pattern, comprising:

a first portion of said circuits that determines, in synchronism with the optical image being scanned, a radial distance of the individual photo-detectors being scanned by adding an increment to the radius of the preceding individual photo-detector and accesses stored data of elliptical or hyperbolic modifications to the scanned optical image according to said radial distance, and

a second portion of said circuits receiving the incoming data and the accessed stored image modification data to output a modified stream of data of individual photo-detectors.

21. The circuit chip of claim 20, wherein the stored data of elliptical or hyperbolic modifications include data characterized by sets of elliptical or hyperbolic intensity curves, whereby compensation can be provided for undesired intensity variations introduced across the optical field .

22. A video imaging device, comprising:

an optical sensor having a two-dimensional array of detectors that are scanned in a raster pattern to output a serial stream of data representative of an intensity of optical radiation thereon,

an optical system fixed with respect to said sensor to image an optical radiation field onto said sensor,

a memory storing intensity correction data for the optical sensor and optical system, said correction data being stored as points on a continuous curve extending along a radius across the imaged optical field from a center thereof and values of slopes between said points, values of said stored points having been determined by characterizing an intensity output pattern of the optical sensor as a combination of two or more distinct geometric shapes when the device optical system views an image field having a uniform intensity thereacross,

dedicated calculation circuits that convert positions of the raster scanning pattern into radial distances across the optical field,

dedicated correction determining circuits that read values from said memory for the calculated radial distances and calculates therefrom an amount of intensity correction to be made to the serial stream of data, and

combining circuits that modify the serial stream of data outputted from the optical sensor with the determined amount of intensity correction, thereby to correct the serial stream of data for intensity variations across the imaged optical field.

23. The imaging device of claim 22, wherein said two or more distinct geometric shapes include at least one ellipse or hyperbola.

24. A video imaging device, comprising:

an optical sensor having a two-dimensional array of detectors that are scanned in a raster pattern to output a serial stream of data representative of intensities of a plurality of color components of an optical radiation field thereon,

an optical system fixed with respect to said sensor to image the optical radiation field onto the sensor,

a memory storing correction data for the optical sensor and optical system, said correction data being stored as points on a plurality of continuous curves that each extend along a radius across the imaged optical field from a center thereof and values of slopes between said points, values of said stored points having been measured through the optical sensor by the device optical system viewing an image field having a uniform intensity thereacross, said plurality of curves including an individual curve for each of the plurality of color components and defining an intensity pattern across the optical sensor that has been characterized by at least one ellipse or hyperbola,

dedicated calculation circuits that convert positions of the raster scanning pattern into radial distances across the optical field,

dedicated correction determining circuits that read values from said memory for the calculated radial distances and calculates therefrom an amount of intensity correction to be made to each of the plurality of color components of the serial stream of data, and

combining circuits that modify the serial stream of data outputted from the optical sensor with the determined amount of intensity correction, thereby to correct the serial stream of data for intensity variations across the imaged optical field.